NATIONAL INSTITUTES OF HEALTH
WARREN GRANT MAGNUSON CLINICAL CENTER
NURSING DEPARTMENT

SOP: Administration of a Continuous Insulin Infusion

I. Essential Information

A. The nurse is strictly prohibited from preparing an insulin infusion. All insulin infusions will be prepared and labeled by a pharmacist.

II. Assessment

A. Verify with second RN that IV bag label and physician's order correspond for the following:
   1. Humulin R® insulin
   2. Other additives, ex., potassium chloride, potassium phosphate
   3. Dosage of insulin and total volume
   4. IV solution
   5. Rate per sliding scale and total volume in IV bag (to ensure that total dosage of infused insulin can be calculated).

B. Review daily serum glucose and potassium results, if ordered

C. Monitor blood glucose at least every hour. Glucose monitoring less than this requires medical order.

D. Monitor blood glucose using bedside blood glucometer approved by Clinical Center and/or protocol.

E. Assess for signs/symptoms of hypoglycemia every hour or as provided by clinical trial protocol.

F. Verify volumetric chamber volume (burritrol) every hour.

G. Confirm diet orders as provided by clinical trial, ex., NPO vs. food consumption permitted

III. Intervention

A. Validate that hypoglycemic emergency supplies are available in the patient care area:
   1. Glucagon
   2. Dextrose 50% in water ($D_{50}W$)
   3. Dextrose 10% in water ($D_{10}W$)
   4. High carbohydrate foods, ex., juice, crackers

B. Collect blood specimens per physician’s order and/or as provided by protocol.

C. Prepare the continuous insulin infusion by priming IV tubing and volumetric chamber with insulin solution. Fill the volumetric chamber with enough insulin solution to last only one to two hours. Allow 15 minutes to elapse and then discard first 50 mL of the insulin solution before connecting to patient. This process allows adsorption of insulin to the plastic tubing and volumetric chamber.
D. Must be infused using a Clinical Center- or protocol-approved infusion device.
E. Use either a "Y" type connector or the most proximal (closest) port to the patient when infusing the continuous insulin infusion.
F. Adjust the insulin infusion rate according to prescriber's sliding scale orders.
G. Notify prescriber immediately of abnormal blood glucose levels and any signs/symptoms of hypoglycemia.
H. Initiate treatment for signs/symptoms of hypoglycemia per prescriber's orders and/or protocol.
I. Patient may not leave patient care area unless accompanied by licensed nurse (RN or LPN).
J. Continue to monitor serum glucose Q1-2 hours (as ordered) and for signs/symptoms of hypoglycemia X4 hours post-completion of insulin infusion.

IV. Documentation

A. MIS or other approved Medical Record forms (Critical Care Flow Sheet or diabetic Record (NIH# 1905) document the following:
   1. Medication administration to include all insulin infusion rate changes, emergency treatments
   2. IV solutions to include all infusion rate changes
   3. Intake and Output
   4. Capillary blood glucose levels
   5. Signs or symptoms of hypoglycemia and/or hypokalemia.
   6. Meals, snacks, and medical intervention required for hypoglycemia.

V. REFERENCES:

A. Fuloria, M., Friedberg, M.A., DuRant, R.H., & Aschner, J.L. (1998). Effect of flow rate and insulin priming on the recovery of insulin from microbore infusion tubing. Pediatrics, 102, 1401-1406.
B. Hewson, M.P., Nawardra, V., Oliver, J.R., Odgers, C., Plummer, J.L., & Simmer, K. (2000). Insulin infusions in the neonatal unit: Delivery variation due to adsorption. Journal of Paediatric Child Health, 36, 216-220.
C. Simeon, P.S., Geffner, M.E., Levin, S.R., & Lindsey, A.M. (1994). Continuous insulin infusions in neonates: pharmacologic availability of insulin in intravenous solutions. The Journal of Pediatrics, 124, 818-820.

D. Starr, A. (March 2001). The portland protocol for continuous intravenous insulin infusion in postoperative diabetic cardiac surgery patients (http://www.starrwood.com/research/insulin/html)
E. Diabetes and Surgery: Management Principles (1999) (http://medmic02.wnmeds.ac.nz/groups/rmo/diabetes/diabetes13.html)

Approved:

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